UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,198	03/26/2004	Didier Communi	9409/2113B	2940

29933 7590 04/12/2006

PALMER & DODGE, LLP
KATHLEEN M. WILLIAMS
111 HUNTINGTON AVENUE
BOSTON, MA 02199

EXAMINER	
LI, RUIXIANG	
ART UNIT	**PAPER NUMBER**
1646	

DATE MAILED: 04/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/811,198	COMMUNI ET AL.	
	Examiner	Art Unit	
	Ruixiang Li	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) *8-19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/077,173.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *08/23/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Sequence alignment*.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, Claims 1-7, in the reply filed on 03/23/2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Applicants' preliminary amendment filed upon 08/24/2004 has been entered. Claims 1-19 are pending. Claims 1-7 are currently under consideration. All other claims are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention.

Information Disclosure Statement

3. The information disclosure statement filed on 08/23/2004 has been considered in full and a signed copy of the form PTO-1449 is attached to the office action.

Drawings

4. The drawings filed on 03/26/2004 are accepted by the Examiner.

Claim Rejections —35 U.S.C.§ 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 1-7 rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well-established utility.

Claims 1-7 are drawn to an isolated antibody that specifically binds to a protein receptor comprising the amino acid sequence of SEQ ID NO: 2 and a pharmaceutical composition comprising the antibody. The claimed invention is not supported by either a specific and substantial asserted utility or a well-established utility. A specific and substantial utility is one that is particular to the subject matter claimed and that identifies a "real world" context of use for the claimed invention which does not require further research.

The specification discloses that the polypeptide of SEQ ID NO: 2 belongs structurally to the purinergic receptor family (P2Y family) but functionally is a pyrimidinergic receptor, preferably a UTP-specific receptor (lines 25-27 of page 2). Nonetheless, the instant disclosure fails to provide any sufficient information or evidence on the specific biological functions or physiological significance of the molecules of the present invention and fails to disclose a patentable utility for the claimed invention.

The specification does not disclose a specific and substantial utility for the claimed invention. The specification discloses that incubation of the cells expressing the receptor protein of SEQ ID NO: 2 with UTP causes the accumulation of inositol triphosphate (see, e.g., Fig. 4). The specification asserts that the polypeptide of SEQ ID NO: 2 is a pyrimidinergic receptor, preferably a UTP-specific receptor (lines 25-27

of page 2) and an agonist or antagonist may be used in a pharmaceutical composition in the treatment of cystic fibrosis (lines 10-11 of page 7). These asserted utilities are not specific and substantial because they do not identify or reasonably confirm a "real world" context of use. The disclosure neither identifies the biological functions of the polypeptide of SEQ ID NO: 2 nor establishes a causative link between the polypeptide of SEQ ID NO: 2 and cystic fibrosis. Clearly, further research would be required to identify the physiological roles of the molecules of the present invention or to establish a causative link between the polypeptide of SEQ ID NO: 2 and any particular disease, such as cystic fibrosis. See Brenner v. Manson, 383 U.S. 519, 148 USPQ 689 (Sup. Ct. 1966), noting "a patent is not a hunting license. It is not a reward for the search, but compensation for its successful conclusion".

The invention lacks a well-established utility. A well-established utility is a specific, substantial, and creditable utility that is well known, immediately apparent, or implied by the specification's disclosure of the properties of a material. The sequence and prior art search does not reveal that the polypeptide of SEQ ID NO: 2 of the present invention or the antibody that binds to the polypeptide has a well-established utility. The specific physiological roles of the polypeptide of SEQ ID NO: 2 remain elusive even after the filing date of the instant application. As taught by Nicholas et al. *(Molecular Pharmacology* 50:224-229, 1996*)*, "unambiguous evidence for regulated release of uridine nucleotides is needed to confirm the physiological importance of pyrimidinergic receptor-signaling responses (the third paragraph of

right column of page 228). Even the specific cellular activities of uridine nucleotides, the ligand of the receptor protein of SEQ ID NO: 2 of the present invention, remain unproved (top of left column of page 229).

No art of record discloses or suggests any property or activity for the claimed molecules such that another non-asserted utility would be well-established for the compounds.

7. Claims 1-7 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Claim Rejections—35 USC § 112, 1st paragraph

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 2-7 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional

characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof.

The claims 2-5 are drawn to an isolated antibody that specifically binds to a receptor comprising the amino acid sequence of SEQ ID NO: 2, wherein said antibody is *an agonist or antagonist of said receptor*, whereas claims 6 and 7 are drawn to a pharmaceutical composition comprising the antibody.

The specification discloses an isolated polypeptide of SEQ ID NO: 2 and an antibody that binds to the polypeptide. However, the instant disclosure does not adequately support the scope of the invention of claims 2-7 because the specification fails to provide a representative number of species of the claimed genus. In fact, the specification does not even disclose a single antibody that is an agonist or antagonist of the receptor protein of SEQ ID NO: 2. As acknowledged in the specification (line 11 of page 18), no specific antagonist was available for any P2Y subtype at the time of the filing of the instant application. It is noted that a description of a genus of cDNA may be achieved by means of a recitation of a representative number of cDNAs, defined by nucleotide sequence, falling within the scope of the genus, or of a recitation of structural features common to the genus, which features constitute a substantial portion of the genus. *Regents of the University of California v. Eli Lilly & Co.*, 119 F3d 1559, 1569, 43 USPQ2d 1398, 1406 (Fed. Cir. 1997). The instant disclosure also fails to provide sufficient description information, such as definitive structural of the claimed antibody that would act as an agonist or antagonist of the receptor protein of SEQ ID NO: 2. Furthermore, the prior art does not provide

compensatory structural or correlative teachings to enable one skilled in the art to identify the encompassed antibodies as being identical to those instantly claimed.

Accordingly, one skilled in the art would not recognize from the disclosure that the applicant was in possession of the claimed antibodies that act as an agonist or antagonist of the receptor protein of SEQ ID NO: 2.

Conclusion

10. No Claims are allowed.

Advisory Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ruixiang Li whose telephone number is (571) 272-0875. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brenda Brumback, can be reached on (571) 272-0961.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [Brenda.Brumback@uspto.gov]. All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is

more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1600.

Ruixiang Li

RUIXIANG LI, PH.D.
PRIMARY EXAMINER

Ruixiang Li, Ph.D.
Primary Examiner
April 9, 2006

GenCore version 5.1.7

OM protein - protein search, using sw model

Run on: April 4, 2006, 20:07:07 ; Search time 233 Seconds
(without alignments)
1105.227 Million cell updates/sec

Title: US-10-811-198-2
Perfect score: 1944
Sequence: 1 MASTESSLLRSLGLSPGPGS.....CRWAATPQDSSCSTPRADRL 365

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 2166443 seqs, 705528306 residues

Total number of hits satisfying chosen parameters: 2166443

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : UniProt_05.80:*
1: uniprot_sprot:*
2: uniprot_trembl:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	1944	100.0	365	1	P2RY4_HUMAN	P51582 homo sapien
2	1944	100.0	365	2	Q5JT22_HUMAN	Q5jt22 homo sapien
3	1938	99.7	365	2	Q502W2_HUMAN	Q502w2 homo sapien
4	1935	99.5	365	2	Q4VBB7_HUMAN	Q4vbb7 homo sapien
5	1934	99.5	365	2	Q4VBB8_HUMAN	Q4vbb8 homo sapien
6	1597	82.2	361	1	P2RY4_RAT	O35811 rattus norv
7	1561	80.3	361	1	P2RY4_MOUSE	Q9jjs7 mus musculu
8	1176	60.5	230	2	Q5Y809_PIG	Q5y809 sus scrofa
9	1127.5	58.0	374	2	O57466_MELGA	O57466 meleagris g
10	1038.5	53.4	347	2	Q7ZZA4_BRARE	Q7zza4 brachydanio
11	1022.5	52.6	543	2	Q5BJ79_XENTR	Q5bj79 xenopus tro
12	1007.5	51.8	537	1	P2RY8_XENLA	P79928 xenopus lae
13	1007.5	51.8	537	2	Q7ZWQ7_XENLA	Q7zwq7 xenopus lae
14	970.5	49.9	302	2	Q4RP73_TETNG	Q4rp73 tetraodon n
15	965	49.6	377	1	P2RY2_HUMAN	P41231 homo sapien
16	962.5	49.5	373	1	P2RY2_MOUSE	P35383 mus musculu
17	950	48.9	374	1	P2RY2_RAT	P41232 rattus norv
18	940.5	48.4	373	2	Q5YA25_PIG	Q5ya25 sus scrofa
19	910.5	46.8	349	2	Q6P852_XENTR	Q6p852 xenopus tro
20	823	42.3	165	1	P2RY4_CRIGR	P58826 cricetulus
21	809	41.6	164	2	Q5DKX1_PIG	Q5dkx1 sus scrofa
22	803.5	41.3	310	2	Q4SEL5_TETNG	Q4sel5 tetraodon n
23	662	34.1	125	2	Q6QHU9_BOVIN	Q6qhu9 bos taurus
24	641.5	33.0	373	1	P2RY1_HUMAN	P47900 homo sapien
25	631	32.5	362	1	P2RY1_MELGA	P49652 meleagris g
26	628	32.3	362	1	P2RY1_CHICK	P34996 gallus gall
27	628	32.3	373	1	P2RY1_CAVPO	P59902 cavia porce
28	621	31.9	373	1	P2RY1_BOVIN	P48042 bos taurus
29	620.5	31.9	357	2	Q9DE05_RAJER	Q9de05 raja erinac
30	616	31.7	373	1	P2RY1_RAT	P49651 rattus norv
31	614	31.6	373	1	P2RY1_MOUSE	P49650 mus musculu
32	614	31.6	373	2	Q544J5_MOUSE	Q544j5 m adult mal
33	611	31.4	373	2	Q5XX73_CANFA	Q5xx73 canis famil
34	611	31.4	373	2	Q8BMJ5_MOUSE	Q8bmj5 mus musculu
35	608.5	31.3	361	2	Q90X57_XENLA	Q90x57 xenopus lae
36	607	31.2	308	2	Q4SEL9_TETNG	Q4sel9 tetraodon n
37	607	31.2	358	2	Q4SPQ4_TETNG	Q4spq4 tetraodon n
38	603	31.0	328	1	P2RY3_CHICK	Q98907 gallus gall
39	599	30.8	328	1	P2RY3_MELGA	O93361 meleagris g
40	592	30.5	328	2	Q5R5L6_PONPY	Q5r516 pongo pygma
41	588	30.2	328	1	P2RY6_RAT	Q63371 rattus norv
42	586	30.1	328	1	P2RY6_HUMAN	Q15077 homo sapien
43	584	30.0	328	1	P2RY6_MOUSE	Q9erk9 mus musculu
44	575	29.6	182	2	Q5DKX2_PIG	Q5dkx2 sus scrofa
45	555	28.5	135	1	P2RY4_MERUN	Q99pe4 meriones un

ALIGNMENTS

RESULT 1
P2RY4_HUMAN
ID P2RY4_HUMAN STANDARD; PRT; 365 AA.
AC P51582;
DT 01-OCT-1996 (Rel. 34, Created)
DT 01-OCT-1996 (Rel. 34, Last sequence update)
DT 10-MAY-2005 (Rel. 47, Last annotation update)
DE P2Y purinoceptor 4 (P2Y4) (Uridine nucleotide receptor) (UNR) (P2P).
GN Name=P2RY4; Synonyms=NRU;
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Euarchontoglires; Primates; Catarrhini; Hominidae;
OC Homo.
OX NCBI_TaxID=9606;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RX MEDLINE=96125055; PubMed=8537336; DOI=10.1074/jbc.270.52.30849;
RA Communi D., Pirotton S., Parmentier M., Boeynaems J.-M.;
RT "Cloning and functional expression of a human uridine nucleotide
RT receptor.";
RL J. Biol. Chem. 270:30849-30852(1995).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RX MEDLINE=96125054; PubMed=8537335; DOI=10.1074/jbc.270.52.30845;
RA Nguyen T., Erb L., Weisman G.A., Marchese A., Heng H.H.Q.,
RA Garrad R.C., George S.R., Turner J.T., O'Dowd B.F.;
RT "Cloning, expression, and chromosomal localization of the human
RT uridine nucleotide receptor gene.";
RL J. Biol. Chem. 270:30845-30848(1995).
RN [3]
RP NUCLEOTIDE SEQUENCE.
RC TISSUE=Pancreas;
RX MEDLINE=96197801; PubMed=8617367; DOI=10.1016/0014-5793(96)00321-3;
RA Stam N.J., Klomp J., van der Heuvel M., Olijve W.;
RT "Molecular cloning and characterization of a novel orphan receptor
RT (P2P) expressed in human pancreas that shows high structural homology
RT to the P2U purinoceptor.";
RL FEBS Lett. 384:260-264(1996).
RN [4]
RP PHOSPHORYLATION SITES SER-333 AND SER-334, AND MUTAGENESIS OF SER-243;
RP SER-333; SER-334 AND SER-339.
RX MEDLINE=21192241; PubMed=11114308; DOI=10.1074/jbc.M009909200;
RA Brinson A.E., Harden T.K.;
RT "Differential regulation of the uridine nucleotide-activated P2Y4 and
RT P2Y6 receptors. Ser-333 and Ser-334 in the carboxyl terminus are
RT involved in agonist-dependent phosphorylation desensitization and
RT internalization of the P2Y4 receptor.";
RL J. Biol. Chem. 276:11939-11948(2001).
CC -!- FUNCTION: Receptor for UTP and UDP coupled to G-proteins that
CC activate a phosphatidylinositol-calcium second messenger system.
CC Not activated by ATP or ADP.
CC -!- SUBCELLULAR LOCATION: Integral membrane protein.
CC -!- TISSUE SPECIFICITY: Pancreas.
CC -!- PTM: Phosphorylation of Ser-333 and Ser-334 is a key step in

```
CC       agonist-dependent desensitization and loss of surface P2RY4. This
CC       phosphorylation does not involve PKC, nor other calcium activated
CC       kinases.
CC   -!- SIMILARITY: Belongs to the G-protein coupled receptor 1 family.
CC   ---------------------------------------------------------------------
CC   This Swiss-Prot entry is copyright. It is produced through a collaboration
CC   between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC   the European Bioinformatics Institute. There are no restrictions on its
CC   use as long as its content is in no way modified and this statement is not
CC   removed.
CC   ---------------------------------------------------------------------
DR   EMBL; X91852; CAA62963.1; -; Genomic_DNA.
DR   EMBL; U40223; AAC50347.1; -; Genomic_DNA.
DR   EMBL; X96597; CAA65415.1; -; Genomic_DNA.
DR   PIR; S68679; S68679.
DR   HSSP; P34996; 1DDD.
DR   Ensembl; ENSG00000186912; Homo sapiens.
DR   HGNC; HGNC:8542; P2RY4.
DR   MIM; 300038; -.
DR   GO; GO:0005887; C:integral to plasma membrane; TAS.
DR   GO; GO:0015065; F:uridine nucleotide receptor activity; TAS.
DR   GO; GO:0007204; P:positive regulation of cytosolic calcium io. . .; TAS.
DR   InterPro; IPR000276; GPCR_Rhodpsn.
DR   InterPro; IPR002286; P2_purnocptor.
DR   InterPro; IPR000018; P2Y4_purnocptor.
DR   Pfam; PF00001; 7tm_1; 1.
DR   PRINTS; PR00237; GPCRRHODOPSN.
DR   PRINTS; PR01066; P2Y4PRNOCPTR.
DR   PRINTS; PR01157; P2YPURNOCPTR.
DR   PROSITE; PS00237; G_PROTEIN_RECEP_F1_1; 1.
DR   PROSITE; PS50262; G_PROTEIN_RECEP_F1_2; 1.
KW   G-protein coupled receptor; Phosphorylation; Polymorphism; Receptor;
KW   Transducer; Transmembrane.
FT   TOPO_DOM      1     34       Extracellular (Potential).
FT   TRANSMEM     35     61       1 (Potential).
FT   TOPO_DOM     62     72       Cytoplasmic (Potential).
FT   TRANSMEM     73     95       2 (Potential).
FT   TOPO_DOM     96    112       Extracellular (Potential).
FT   TRANSMEM    113    131       3 (Potential).
FT   TOPO_DOM    132    154       Cytoplasmic (Potential).
FT   TRANSMEM    155    174       4 (Potential).
FT   TOPO_DOM    175    196       Extracellular (Potential).
FT   TRANSMEM    197    222       5 (Potential).
FT   TOPO_DOM    223    246       Cytoplasmic (Potential).
FT   TRANSMEM    247    269       6 (Potential).
FT   TOPO_DOM    270    287       Extracellular (Potential).
FT   TRANSMEM    288    309       7 (Potential).
FT   TOPO_DOM    310    365       Cytoplasmic (Potential).
FT   MOD_RES     333    333       Phosphoserine (Probable).
FT   MOD_RES     334    334       Phosphoserine (Probable).
FT   DISULFID    108    185       By similarity.
FT   VARIANT     168    168       V -> M (in dbSNP:1152186).
FT                                /FTId=VAR_011854.
FT   VARIANT     178    178       N -> T (in dbSNP:1152187).
FT                                /FTId=VAR_011855.
FT   VARIANT     191    191       P -> L (in dbSNP:1152188).
FT                                /FTId=VAR_011856.
FT   MUTAGEN     243    243       S->A: No effect.
FT   MUTAGEN     333    365       Missing: Abolishes agonist-induced
FT                                phosphorylation. Prevents agonist-induced
FT                                desensitization and loss of cell surface
FT                                receptors.
FT   MUTAGEN     333    359       SSLALVSLPEDSSCRWAATPQDSSCST->AALALVALPEDA
FT                                ACRWAAAPQDAACAA: Greatly reduces agonist-
FT                                induced desensitization and loss of cell
FT                                surface receptors.
FT   MUTAGEN     333    333       S->A: Greatly reduces agonist-induced
FT                                desensitization and loss of cell surface
FT                                receptors; when associated with A-334 and
FT                                A-339.
FT   MUTAGEN     334    334       S->A: Greatly reduces agonist-induced
FT                                desensitization and loss of cell surface
FT                                receptors; when associated with A-333 and
FT                                A-339.
FT   MUTAGEN     339    339       S->A: Greatly reduces agonist-induced
FT                                desensitization and loss of cell surface
FT                                receptors; when associated with A-333 and
FT                                A-334.
FT   MUTAGEN     344    365       Missing: No effect on agonist-induced
FT                                phosphorylation, no functional effect.
FT   MUTAGEN     356    365       Missing: No functional effect.
FT   CONFLICT     86     86       L -> V (in Ref. 2).
FT   CONFLICT    234    234       S -> A (in Ref. 2).
SQ   SEQUENCE   365 AA;  40963 MW;  23E0AFED3B7BDEED CRC64;

  Query Match             100.0%;  Score 1944;  DB 1;  Length 365;
  Best Local Similarity   100.0%;  Pred. No. 1.1e-131;
  Matches  365;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 MASTESSLLRSLGLSPGPGSSEVELDCWFDEDFKFILLPVSYAVVFVLGLGLNAPTLWLF 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MASTESSLLRSLGLSPGPGSSEVELDCWFDEDFKFILLPVSYAVVFVLGLGLNAPTLWLF 60

Qy         61 IFRLRPWDATATYMFHLALSDTLYVLSLPTLIYYYAAHNHWPFGTEICKFVRFLFYWNLY 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 IFRLRPWDATATYMFHLALSDTLYVLSLPTLIYYYAAHNHWPFGTEICKFVRFLFYWNLY 120

Qy        121 CSVLFLTCISVHRYLGICHPLRALRWGRPRLAGLLCLAVWLVVAGCLVPNLFFVTTSNKG 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 CSVLFLTCISVHRYLGICHPLRALRWGRPRLAGLLCLAVWLVVAGCLVPNLFFVTTSNKG 180

Qy        181 TTVLCHDTTRPEEFDHYVHFSSAVMGLLFGVPCLVTLVCYGLMARRLYQPLPGSAQSSSR 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        181 TTVLCHDTTRPEEFDHYVHFSSAVMGLLFGVPCLVTLVCYGLMARRLYQPLPGSAQSSSR 240

Qy        241 LRSLRTIAVVLTVFAVCFVPFHITRTIYYLARLLEADCRVLNIVNVVYKVTRPLASANSC 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        241 LRSLRTIAVVLTVFAVCFVPFHITRTIYYLARLLEADCRVLNIVNVVYKVTRPLASANSC 300

Qy        301 LDPVLYLLTGDKYRRQLRQLCGGGKPQPRTAASSLALVSLPEDSSCRWAATPQDSSCSTP 360
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        301 LDPVLYLLTGDKYRRQLRQLCGGGKPQPRTAASSLALVSLPEDSSCRWAATPQDSSCSTP 360

Qy        361 RADRL 365
              |||||
Db        361 RADRL 365


RESULT 2
Q5JT22_HUMAN
ID   Q5JT22_HUMAN PRELIMINARY;      PRT;   365 AA.
AC   Q5JT22;
DT   10-MAY-2005 (TrEMBLrel. 30, Created)
DT   10-MAY-2005 (TrEMBLrel. 30, Last sequence update)
DT   13-SEP-2005 (TrEMBLrel. 31, Last annotation update)
DE   Pyrimidinergic receptor P2Y, G-protein coupled, 4 (Pyrimidinergic
DE   receptor P2Y4).
GN   Name=P2RY4; ORFNames=RP13-26D14.5-001;
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Euarchontoglires; Primates; Catarrhini; Hominidae;
OC   Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   NUCLEOTIDE SEQUENCE.
RA   Brown A.;
RL   Submitted (MAY-2005) to the EMBL/GenBank/DDBJ databases.
RN   [2]
RP   NUCLEOTIDE SEQUENCE.
RC   TISSUE=PCR rescued clones;
RX   MEDLINE=22388257; PubMed=12477932; DOI=10.1073/pnas.242603899;
RA   Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
RA   Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
RA   Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA   Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
RA   Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
```